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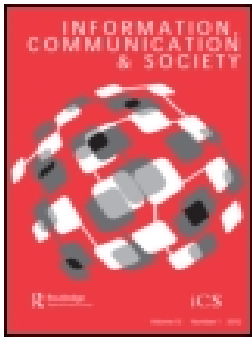
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Tracing controversies in hacker communities: ethical considerations for internet research

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ABSTRACT

This paper reflects on the ethics of internet research on community controversies. Specifically, it focuses on controversies concerning gendered, social interaction in hacking communities. It addresses the question how internet researchers should treat and represent content that individuals controversially discussed online. While many internet sources are likewise technically public, they may yet suggest distinct privacy expectations on the part of involved individuals. In internet research, ethical decision-making regarding which online primary sources may be, e.g., referenced and quoted or require anonymisation is still ambiguous and contested. Instead of generalisable rules, the context dependence of internet research ethics has been frequently stressed. Given this ambiguity, the paper elaborates on ethical decisions and their implications by exploring the case of a controversial hackerspaces.org mailing list debate. In tracing data across different platforms, it analyses the emerging ethico-methodological challenges.

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Introduction

Hackers and hacking communities have been described as influential actors in digital societies: as activists monitoring IT corporations and policymakers (Coleman, 2013; Kubitschko, 2015; Schrock, 2016); as hubs for digital innovation and entrepreneurship (Davies, 2017; Lindtner, Hertz, & Dourish, 2014); and as facilitators of IT expertise (Bilandzic & Foth, 2017; Schrock, 2014). Such accounts counter the widespread, misleading idea that 'hacking' merely refers to malicious cybercrime (Jordan, 2008; Tréguer, 2015). The referenced authors, among others, are certainly right in stressing hackers' relevance and potential.

Yet, it should likewise be considered that some hackers and their communities are also entangled in problematic social dynamics and developments. This concerns particularly the interaction with and inclusion of minority groups, i.a. women.¹ Early publications on hacking have dedicated some attention to gendered social dynamics and communities' homogeneity (Gilboa, 1996; Jordan & Taylor, 1998). Only recently though, these issues re-attracted attention: in secondary literature (Davies, 2017, Chapter 7; Fox, Ulgado &

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Rosner, 2015; Rosner & Fox, 2016; Toupin, 2014) and in first-hand accounts of (feminist) hackers (Aurora, 2013; Geek Feminism, n.d.; see also Cox, 2016; Grimm, 2013).

My paper reflects on ethical challenges arising in this context. When researching hacking communities, online and offline alike, one potentially also faces communal discussions, normatively loaded controversies, gendered social dynamics and absences which affect under-represented individuals/groups and their in-/exclusion. Analysing and discussing these issues is societally relevant, since such research can potentially counter exclusion mechanisms and facilitate the inclusivity of communities crucial for IT experience and digital skills (Rosner & Fox, 2016; Schrock, 2014).

Alas, communal controversies also imply that, as researcher, one might discover and consequently discuss concerns which could cast involved communities and/or individuals in a negative light. This is relevant from an ethical perspective because criticism may be detrimental to researched communities. It therefore needs to be balanced against the ‘fundamental ethical principle of minimizing harm’ (Markham & Buchanan, 2012, p. 7). In consequence, researchers find themselves in situations where they need to balance potential benefits for minority groups/individuals against potential harm caused by criticism.²

In internet research, this ethical dilemma is further complicated since community controversies are not only knowingly communicated to researchers in interviews or physically witnessed. Instead, researchers often come to see the conversational traces of such controversies: on mailing lists, forums, weblogs or social media (see also Geiger & Ribes, 2011; Hine, 2015, pp. 68ff.).

Content shared by individuals online may be likewise technically public, but may imply different privacy expectations. While certain online sources are *overtly public*, others may be described as *tacitly public*. With ‘overtly public’, I refer to publications in which individuals are explicitly addressing wider audiences and consciously call attention to an issue (e.g., most weblogs). With ‘tacitly public’, I point to sources which are technically publicly accessible, but which are mainly used for communication considered relevant for a confined audience (e.g., certain mailing lists and forums). Ethically, it hinges therefore not only on technical availability if and how online material should be included.

In consequence, this paper discusses ethical decisions in internet research on communal controversies. To do so, I examine two questions:

- (1) What are potential risks, harm and benefits – also given the normative dimensions inherent to the controversy?
- (2) What privacy (and publicity) expectations are suggested by traversed platforms and users’ interactions? How can these be acknowledged?

In the following sections, I first introduce the methodology used to collect, select and analyse the primary sources discussed in this paper. I then clarify what is meant with ‘ethics’ in this paper and will provide a literature overview of current debates on ethics in internet research. Moreover, I elaborate on previous work on tensions in hacker cultures, especially concerning gendered community dynamics. Subsequently, I examine one case in depth and reflect on how it is illustrative for ethical decision-making in research on controversial, normative subjects: I analyse a controversial discussion concerning the inclusion and role of women in hacker-/makerspaces that started on a

hackerspaces.org mailing list. Lastly, I highlight main conclusions and elaborate on the broader implications of the examined challenges.

Methodology, corpus and selection criteria

In this paper, I discuss one case and a selection of primary sources which I collected during my ongoing, ethnographic research on hacker/maker communities. For my research, I draw on digital ethnography (Hjorth et al., 2017; Pink et al., 2016). Digital ethnography is a qualitative, multimethod approach for studying socio-technological practices. In my case, it so far involved visiting hacker-/makerspaces mainly in the United Kingdom, the Netherlands and Germany; interviews with hackers and makers; participation in and organisation of tech-creative events such as hackathons; and observations of digitally mediated practices across multiple platforms used by hacker-/makerspace members. Thus far, I collected three main types of primary sources, i.e., (partly recorded) interviews; observations documented with fieldnotes and photos; and online communication (mostly written text). Only the latter will be discussed in this paper and I thus analyse merely a small excerpt sampled from my ethnographic data. I have provided an overview of the corpus which I compiled for my analysis in Table 1.

I focus on online communication as primary sources in this paper, since it is ethically ambiguous to decide if/how to reference and discuss particularly *tacitly public* sources – for reasons mentioned in the introduction and further explained below. Moreover, when coding and analysing these sources by drawing on a grounded theory approach (Bamkin, Maynard, & Goulding, 2016; Corbin & Strauss, 2015), communal tensions concerning the in- and exclusion of minority individuals and groups were a recurring, broader

Table 1. Overview of selected material/corpus; source: created by the author.

<i>Mailing list threads</i>	
1. Started 17 January 2013; subject: 'Women in Makerspaces'; 39 emails	https://lists.hackerspaces.org/pipermail/discuss/2013-January/thread.html#7298
2. Started 18 January 2013; subject: 'Hackers, feminism, and bullying'; 49 emails	https://lists.hackerspaces.org/pipermail/discuss/2013-January/thread.html#7330
3. Started 18 January 2013; subject: 'Tips and Tricks (Was Women in Makerspaces)'; 16 emails	https://lists.hackerspaces.org/pipermail/discuss/2013-January/thread.html#7345
4. Started 18 January 2013; subject: 'How do you bring in women'; 17 emails	https://lists.hackerspaces.org/pipermail/discuss/2013-January/thread.html#7366
<i>Tweets</i>	
5. 18 January 2013 11 retweets, 20 replies	https://twitter.com/lizhenry/status/292343788922343424
6. 18 January 2013 11 retweets, 10 replies	https://twitter.com/russss/status/292092767004393472
7. 18 January 2013 3 retweets, 14 replies	https://twitter.com/wrdnrd/status/292395359190269952
8. 20 January 2013	https://twitter.com/junyer/status/292868013437370368
<i>Online magazine articles</i>	
9. 3 February 2014	https://modelviewculture.com/pieces/the-rise-of-feminist-hackerspaces-and-how-to-make-your-own
10. 18 February 2015	http://www.yesmagazine.org/people-power/is-the-maker-movement-about-hacking-society-just-hardware
<i>Wiki entries</i>	
11. n.d.; Timeline of incidents: 2013	http://geekfeminism.wikia.com/wiki/Timeline_of_incidents
<i>Blog posts</i>	
12. 10 February 2014	https://hypatia.ca/2014/02/10/feminist-hackerspaces-everywhere
13. 20 February 2015 (site is no longer available)	https://miascharchie.com/tag/women/page/2

issue. The focus of this paper is thus also relevant, since these tensions are crucial to understand and potentially enhance the accessibility of hacker-/makespaces, given their importance as venues for IT skills acquisition, among other things.

I selected a controversy which started on a hackerspaces.org mailing list. Subsequently, it spread across multiple platforms and received wider attention on e.g. social media and blogs (see Table 1). I picked this case for three main reasons. First, it demonstrates broader tensions observed in my material, concerning i.a. the interaction between minority and majority groups in local communities. Second, it indicates efforts aimed at improving such interaction as well as obstacles. Third, it illustrates recurring ethico-methodological issues regarding whether and how to discuss material that provides insights into relevant, but precarious, communal negotiations.

The specific primary sources relevant to this case were collected by *tracing* the debate *in hindsight* across multiple, interlinked platforms, such as mailing list archives, blogs, social networks and news sites. While ‘tracing’ as method has been particularly prominent in ethnographic approaches to internet research (Geiger & Ribes, 2010, 2011; Hine, 2015, pp. 68ff.; Leander & McKim, 2003), it encompasses a variety of qualitative and quantitative approaches to internet research (Hewson & Stewart, 2016; Marres, 2015; Stein, Rump, Kretzschmar, & Van Steenberg, 2013). I gathered data across different platforms; the field was hence not confined to one centralised platform (Lindgren, 2017, pp. 257–270). This understanding of the field is widely acknowledged in key works concerning ethnography of digital practices (Beaulieu, 2010; Hine, 2015; Hjorth et al., 2017; Pink et al., 2016).

After selecting the indicated case, I interpretatively analysed the different textual sources concerning the inclusion and role of women in hacker-/makerspaces. Thematically, my analysis pays specific attention to the ethical implications for researched individuals and groups when discussing these sources. Tracing data and material online raises the abovementioned issue that *overtly public* or *tacitly public* may suggest diverging privacy expectations on the side of involved individuals. This results in ethico-methodological challenges which are typical for, yet ambiguously addressed in internet research.

Ethics and internet research

The term ‘ethical’ is commonly used to indicate ‘morally right’ choices and actions. However, following a pragmatist approach to ethics, in this paper, the term ‘ethical’ serves as indication for the *kind* of debate at hand (Keulartz, Schermer, Korthals, & Swierstra, 2004). Within a pragmatist framework, something is ethical because social values, normativities and moral issues are being negotiated. A decision described as moral or immoral would be likewise an ethical issue, in the sense that ‘[w]e perform ethics when we put up moral routines for discussion’ (Swierstra & Rip, 2007, p. 6). Therefore, (research) ethics are understood as articulations and negotiations of normative standpoints and decisions. Likewise, the controversies discussed in this paper are a form of ethical communication, since communal morals and norms are asserted and challenged.

A pragmatist understanding of ethics is apt for internet research because it emphasises that norms and morals are not static. They can be contested and evolve in interaction with socio-technological changes (Keulartz et al., 2004). Pragmatist ethicists point out that (digital) technology tends to challenge what we consider morally appropriate. In debates and negotiations concerning social norms, these may be re-affirmed, adjusted or more

fundamentally re-organised (Swierstra & Rip, 2007, pp. 6ff.). This argument regarding negotiations of norms and moral assumptions is likewise reflected in evolving and conflicting positions concerning internet research ethics.

Social science research involving human participants can draw on a considerable corpus of ethics literature contemplating dos and don'ts (see, e.g., Miller, Birch, Mauthner, & Jessop, 2012; Murphy & Dingwall, 2001). When it comes to internet research, such literature is only growing since relatively recently (though rapidly), i.e., since the early 2000s (see Buchanan & Ess, 2008 for a short historical overview). Internet researchers may not necessarily meet the individuals they are writing about face-to-face, yet they commonly encounter and collect information by or about these persons online (Gatson & Zweerink, 2004; Markham & Buchanan, 2012). This is also reflected in early internet research ethics deliberations posing whether digital material needs to be conceptualised as 'representations or people' (White, 2002).

It is still a contentious point when to consider content exchanged online as confidential or public and how to assess this (Bassett & O'Riordan, 2002; Berry, 2004; Buchanan, 2010, 2017). As Markham and Buchanan state in the 2012 report³ on ethical decision-making for the *Association of Internet Researchers (AoIR)*: 'The ethical parameters for collecting information in online public spaces are ambiguous and contested' (p. 13). According to Ess (2013), this lack of agreement is also related to the multi-/interdisciplinary contexts in which internet research is set and to the cultural diversity presented by researchers and researched alike (pp. 23ff).

Central to ethical decisions and the moral appropriateness of internet research is the question under what circumstances online environments may be considered public or private (Buchanan & Ess, 2008, 279ff.; Hutchinson et al., 2017, pp. 63ff.). Particularly for individuals, this circles around the issue which privacy expectations are proportionate in online environments. Privacy expectations have been discussed with regard to the ethics of using *Twitter*, *Facebook* as well as other social (media) data (Ess, 2013, pp. 35ff.; Markham & Buchanan, 2012, pp. 6ff.; Matzner & Ochs, 2017; Zimmer, 2010; Zimmer & Proferes, 2014). With reference to the empirical work of i.a. Sveningsson (2003) and Hudson and Bruckman (2004), Markham and Buchanan (2012) stress that '[p]eople may operate in public spaces but maintain strong perceptions or expectations of privacy' (p. 6).

This issue is also illustrated, and carefully reflected upon, in Gajjala's (2004) feminist ethnographies of online communities like the *South Asian Women's Network (SAWNET)*. In her ethnographic research, and amidst increasing research interest in sociality online, Gajjala experienced what she describes as the 'SAWNET refusal' (19ff.): members of this email discussion group expressed, by vote, their predominant opposition to being studied and their wish '[...] to be "left alone" in what they perceived as private space' (p. 20). Similar, feminist perspectives on internet research emphasise that 'a commitment to "an ethics of care"' (Luka, Millette, & Wallace, 2017; see also Toombs, Bardzell, & Bardzell, 2015) and engaged, communitarian approaches (Hall, Frederick, & Johns, 2004) make much needed contributions to research ethics, as they facilitate more reflexive, situated studies of socio-technical practices (see also Leurs, 2017).

While considerations for individual (and increasingly group) privacy have been pivotal for internet research ethics, authors such as Berry (2004) have argued that 'privacy is a misleading and confusing concept to apply to the Internet' (p. 53). Instead, he proposes

Open-Source Ethics for internet research, building on principles such as ‘openness, decentralisation, sharing, collaboration and mutual support’ (p. 67). Fuchs (2017) moreover warns of *research ethics fundamentalism* which ‘risks to paralyse critical social media analysis’ (p. 45). He argues that this applies especially to topics that are crucial for critical insights, such as ‘online fascism or online harassment of women’ (p. 45).

Given such persistent ambiguities, the question if and how internet researchers may discuss information by/on individuals relevant to their research is still under discussion and as such worth revisiting. Before addressing this question by examining the hackerspaces.org debate, the following section contextualises the selected case. It provides an overview of issues raised by feminist hackers and hacking scholars.

Hacking and geek feminism

Gendered social dynamics have triggered heated discussions and activism among hackers. This is also linked to the emergence of feminist hackerspaces and ‘geek feminism’ (Fox et al., 2015; Geek Feminism, n.d.; Toupin, 2014). In turn, these developments were related to concerns about misogyny, sexism and harassment in largely white male-dominated hacker communities (Mills, 2012; Montgomery, 2013; Reagle, 2012, 2017).

Toupin (2014) stresses that platforms such as the *Geek feminism wiki* were crucial for feminist hackerspaces: ‘The Geek Feminism project helped highlight the ubiquity of sexual harassment at tech and open source conferences – topics which were rarely discussed’ (Toupin, 2014). Similar issues have been pointed out by members of hacking communities who tend to be involved in feminist and diversity-oriented collectives (Grimm, 2013; Henry, 2014; Mills, 2012). They were likewise taken up and observed by academics (Fox, 2015; Reagle, 2017; Rosner & Fox, 2016; Toupin, 2013).

Especially incidents at tech and open source conferences kicked off wider discussions on problematic and harmful gender dynamics. Notably, these were reports of sexism and harassment of female participants, occurring at hacker conferences such as *Defcon* in the United States (Defcon, 2012; Mills, 2012) and the *Chaos Communications Congress-29* in Germany (Bednarczyk & Hödl, 2013; CCC incidents, 2012). Activist organisations had taken to creating and distributing so-called ‘Anti-harassment’ cards (first in 2011 at *Defcon*, then in 2012 at the CCC-29; see Figure 1). These were created in addition to internal anti-harassment conference policies.

The red, yellow and green cards were meant to support conference visitors in communicating inappropriate attention/behaviour and harassment by handing over a yellow or red version. However, the cards led to controversial reactions (Mirromaru, 2013). They were even described as triggering even more pronounced sexism and harassment, because ‘[t]he cards were met with derision and ridicule, with some men turning them into a game to see who could collect the most cards’ (Mills, 2012).

In 2013, the harassment incidents which occurred at the U.S. hackerspace *Noisebridge* called further, though still moderate, attention to issues of misogyny, sexism and harassment of women hackers in communal spaces (Montgomery, 2013). After female members reported experiences of sexual harassment and assaults in 2013, the San Francisco-based anarchist hackerspace added an anti-harassment policy to its former one-and-only rule ‘Be excellent to each other’. This change in communal principles and the incidents leading up to their implementation were discussed among community members, partly in more



Figure 1. Anti-harassment cards. Retrieved from http://geekfeminism.wikia.com/wiki/Creeper_Move_cards

overtly public environments such as *weblogs* (Montgomery, 2013) and social media posts explicitly aimed at wider audiences (Grimm, 2013).

In 2016, the case of Jacob Appelbaum and the (partly anonymous) reports of individuals who described having been intimidated, (sexually) harassed and abused by the former member and cofounder of *Noisebridge* eventually received global media attention. This was also because he was prominently affiliated with *The Tor Project* and *WikiLeaks*. When *The Tor Project* announced that Appelbaum would not be part of the initiative any longer (Steele, 2016), newspapers such as the British *Guardian* (Loll, 2016) and the German *Spiegel* (Fuchs & Weisbrod, 2016) published articles on the case and related events. These were i.a. based on leaked sources which had originally been circulated internally among *Tor* staff.

Similarly, authors reporting overtly public on the earlier incidents in hackerspaces and at conferences, such as Montgomery (2013) and Mills (2012)⁴, quote from and refer to communal email lists and social networking profiles. Some of these sources are only accessible to community members and the authors. In other cases, they refer and link to content from email lists, which has been publicly archived and can be accessed. In Montgomery's case, the comments section indicates that the public accessibility of communal mailing list is not as clear and straightforward as assumed by the journalist/author. The surprise expressed by some community members refers to a key ethical issue in internet research: that '[s]ome users perceive publicly accessible discourse sites as private' (Markham, 2005, p. 812).

Insights into such cases, online controversies and the dynamics leading up to their publication can facilitate a better understanding of gender-related issues, discrimination and

sexism in hacker communities. This information is insightful to reflect on factors harmful to the mental and bodily wellbeing of minorities in these groups. Moreover, such research sheds light on issues of access and inclusivity in hacking communities – which appears also relevant given the more general gender bias in IT professions (Abbate, 2012; Misa, 2011).

However, in many cases, the information needed to address controversies and debates pertinent to gender and communal diversity has ‘travelled’ across different platforms. Before it reaches more overtly public platforms, such as blogs or online newspapers, some of the material relevant to analysing and observing sexism and discrimination in hacker communities is posted in forums, sent via mailing lists or posted on communal wikis. How to present and discuss such material will be discussed in the following section, with regard to a controversial discussion that started on a hackerspaces.org mailing list.

Hackerspaces.org: discussing gendered interaction and communal in-/exclusiveness

Hackerspaces.org is an umbrella (wiki) site for a global network of individuals involved in or affiliated with hackerspaces. Hackerspaces, also called hackerspaces or makerspaces, are physical places where community members meet, discuss and engage in creative practices: their activities range from coding and electronics building to woodwork and welding (Davies, 2017; Moilanen & Vadén, 2013). Hackerspaces.org facilitates communication among members of different communities, i.a. via an IRC channel, mailing lists, jabber and flickr. The issues discussed via various channels are often based on individuals’ engagement and experiences in hacker-/makerspaces, but they may likewise refer to more general hacker/maker/craft topics.

In January 2013, a thread titled ‘Women in Makerspaces’⁵ (Table 1, no. 1) was started in the mailing list ‘Discuss – Hackerspaces general discussion’ (see also Davies, 2017, Chapter 7; Lewis, 2015). All contributions to this mailing list are publicly archived. Most of them include contributors’ names and email addresses; only in some cases, aliases were used. The thread started with a contribution by a hackerspace member elaborating on her impression that communities with very few women (less than 15%) appear uncomfortable to her. Her comments were not only meant as observation, but also posed the question how certain dynamics could be changed. What unfolded afterwards, was a heated, divisive debate on the demographic homogeneity of hacker-/makerspaces and implications for minority groups. The initial remarks are critical of leadership and communal structures predominant in those communities. Based on the contributor’s personal experience, these are described as favouring male, white members.

What are potential risks, harm and benefits?

In response to the initial comment, an extensive thread and several spin-off threads evolved, in which contrastive views and partly emotionally charged positions were exchanged. It was i.a. discussed why women are less present in hacker-/makerspaces, particularly in leading functions like trustee positions. On the one hand, it was suggested that women are less present, as the white male-dominated spaces were created according to principles making interactions and engagement more difficult and less attractive for

minorities. On the other hand, it was implied that women's underrepresentation is related to (the lack of) specific interests concerning key activities of hacker-/makerspaces, time, engagement, leadership qualities and capabilities. It should be noted here that this is certainly a simplification and that the debate was partly more nuanced and constructive, especially in spin-off threads discussing practical tips for how communities could be made more inclusive (Table 1, nos. 3 and 4).

When examining the comments in these threads, the question arises whether this could expose individuals to harm, e.g., in form of discrimination. As some individuals voice views which are controversial, exposing these comments in an academic article could lead to detrimental effects in their communities or workplaces. Therefore, I am not specifically mentioning any names/aliases of persons who contributed only to the mailing list. I will also not provide hyperlinks to specific comments, though to the general thread, a decision which I will explain under *Privacy and publicity expectations* below. Moreover, I will stress that avoiding harm is not just a matter of anonymisation, but also of fair and balanced representations accounting for the dynamics of a discussion.

While harm should be avoided or at least minimised, one also needs to consider if the study may be beneficial in the first place. Why would one examine the controversies and struggles around gendered, social interaction and demographic homogeneity in hacker-/makerspaces? Such a study aims at facilitating conditions in hacking communities which are safe, just and inclusive. This is relevant to the mental and bodily wellbeing of persons in these spaces. Moreover, it addresses the issue that women and (ethnic) minorities tend to be excluded from many spaces known to be valuable for acquiring digital expertise and participating in related professions (see, e.g., McGrath Cohoon & Aspray, 2008; Wajcman, 2007).

Power relations and vulnerabilities

Contributors to the thread are not per se vulnerable in the narrow sense of the term: they are adults (even though it could be argued that this is difficult to verify) and they voluntarily participated in the discussion. Yet, what these individuals discuss is whether belonging to a minority/majority group leads to discrimination and unfair treatment in some communities. Therefore, vulnerability and power dynamics are important issues for the discussion dynamics. As Fuchs argues, with reference to Bhaskar (2008), it is typical for critical media research that '[...] the user expresses moral values online, and the researcher has a critical attitude towards power structures' (Fuchs, 2017, p. 46).

It should be noted that, communally, it is contested who dominantly exerts power in this debate. One follow-up thread (Table 1, no. 2) started with a contribution describing feminist criticism as 'reverse-discrimination' and 'feminist bullying'. Such responses demonstrate: while feminist hackers call for strategies facilitating diversity in communal spaces, others may oppose the reasoning for this activism. In contrast, they depict the male majority as victims. This juxtaposition illustrates a crux in research on controversies: individuals suggesting opposing arguments might likewise see and portray themselves as being misinterpreted, mistreated and discriminated. This constellation implies that already addressing power relations within groups is as such an ethical task, because one gives credibility to the groups involved.

As reasoned above, my paper is supportive of tackling issues raised by feminist hackers in these threads and beyond, concerning, e.g., the difficult position of minorities in hacker-/makerspaces. In positioning myself, I also made an ethical argument for why this study is needed and why the selected material should be analysed. The indicated normativities and power relations within these groups should, however, not obstruct a fair and balanced analysis and representation of examined data, with particular regard to likely privacy expectations.

Privacy and publicity expectations

The thread I am referring to was part of the hackerspaces.org ‘general discussion’ mailing list (Table 1, no. 1; see also Henry, 2014). A first ethical decision in this context is illustrated in my indication of relevant sources (Table 1). Contributions to this hackerspaces.org mailing list are technically public because they are openly archived. However, the communication channel is i.a. used for discussing topics and sometimes problems which are of concern for different local hacker/maker communities. Entirely anonymising the ‘Women in makerspaces’ debate would require: first, withholding sources; second, obscuring the discussed topic to an extent that it would not allow readers to recognise the original context. Hackerspaces.org is quite a unique collective however and replacing it with an alias, while still explaining basic features, is unlikely to prevent it being recognised as source of the depicted debate.

More importantly, some individuals who participated in the debate chose to draw attention to it on platforms which are overtly public (Table 1, nos. 5–13). They explicitly aimed at reaching wider audiences. Individuals publications are basically not concerned with privacy, quite the opposite: they have ‘publicity expectations’. They aim at raising awareness for problematic social dynamics and needed changes in hacking communities. In such publications though, individuals often refer to communication by persons interacting in online environments which are technically/tacitly public, yet not predominantly meant as public outreach. Including overtly public statements by involved actors is as such an ethical matter, as it credits their input and relevance. At the same time, one acquiesces in the fact that readers will be able to access sources referred/linked to in these overtly public primary sources.

Therefore, when mentioning those actors who have publicly taken a stance on discussed issues, one inevitably also draws attention to communal, tacitly public sources mentioned by them. For examples, the tweets listed in Table 1 even explicitly link to a specific message and quote from it. This indicates an issue frequently stressed by pragmatist ethicists, i.e., that technological developments may challenge established ethical principles (Keulartz et al., 2004; Swierstra & Rip, 2007). When dealing with interlinked online sources, withholding content which is tacitly public, but interlinked with overtly public documents is impracticable. I therefore indicate sources which are overtly and tacitly public alike, though I only mention names of individuals who spoke out on overtly public platforms, as acknowledgment of these sources. This approach aims to balance two conflicting, moral concerns: the recognition of input and work from actors active in the investigated field; and the sensitivity of information shared in environments for which it is ambiguous whether shared content was also meant to be discussed more widely.

While I explicitly refer to overtly public and tacitly public primary sources alike, it should be ensured that: first, when communicating in overtly public environments, individuals' input needs to be explicitly acknowledged. Second, when communicating via tacitly public channels, their personal details and/or aliases should be withheld in academic publications. Third, contributions need to be carefully and thoroughly contextualised, particularly with regard to adjustments and qualifications which individuals communicate after initial comments. The last point, which I elaborate on in the following section, is not merely a matter of *if* a source is indicated, but also *how* certain positions are represented and contextualised.

Acknowledging processes and adjustments

The hackerspaces.org thread has been highlighted in an article by Liz Henry (2014), one of the founders of the women-centred hackerspace *Double Union* in San Francisco. It was published in the online magazine *Model View Culture* about a year after the hackerspaces.org discussion. Henry reflects on the advantages and reasons for setting up feminist and women-centred hackerspaces. The author mentions the hackerspaces.org thread 'Women in makerspaces' as example for male misconceptions of women's involvement and interests in hackerspaces. What is striking is that Henry did not select the most provoking, hostile remarks. Instead, she links to an email stating that

[i]f a hackerspace has one female and she wants more females in the hackerspace then she should start a campaign to find more females. It could be that she host[s] a class about e-textiles or whatever it is females like to talk about. (Table 1, no. 9)⁶

As also Henry notes, it appears not to be posted with hostile intentions, yet exposes misleading, gendered assumptions about women in hacker-/makerspaces and their interests. The comment has been referred/linked to on various overtly public platforms such as public Twitter profiles and weblogs (Table 1, nos. 5–8 and 10–13). It was also mentioned and discussed in e-papers (Aires, 2015), book publications (Davies, 2017, Chapter 7) and reports (Lewis, 2015). Most of these follow-up commentaries refer to the 'Woman in makerspaces' debate by referencing the article published by Henry and linking to the original hackerspaces.org thread.

I likewise emphasise this comment, as it illustrates that when discussing controversial topics, ethical decisions can be a challenging balancing act. In hacking communities, the e-textiles message has become iconic for misconceptions and stereotypes towards female hackers on side of their (male) peers (Henry, 2014). Liz Henry wrote that many female and feminist hackers '[...] focused on the e-textiles message because we could make fun of it, not because it was especially horrible. That month there were many truly appalling, misogynist, sexist posts to the hackerspaces.org list' (2014).

Although not the most hostile message from the hackerspaces.org threads, it appears to be relevant and useful for feminist hackers in that it illustrates subtle dynamics of gendered misconceptions – rather than blatant hostility and sexism presented in other remarks. It functions as a discursive tool inviting readers to question their own prejudices. Nevertheless, when including such quotes to illustrate certain issues, from a research ethics perspective, they require careful contextualisation.

This also implies that the position of the comment and developments throughout the thread need to be made explicit. After receiving critical responses to his initial contribution,

the sender apologised in the same thread. He defensively brought forward that – while acknowledging the unfortunate phrasing and having ‘a lot to learn’ – his comment was unfairly portrayed as indication of a generally sexist attitude. He moreover stressed his awareness that he is ‘catching a lot of heat for the reply on other social media sites’. His rectifying reply to the thread is significant in two main ways. First, the sender was initially not aware of the misconceptions implicated in his comment (and the ridicule it would receive). This is at the same time one of the reasons why it has been taken up as illustration of gender/diversity-related issues in hackerspaces. Second, the message has been part of a discursive process rather than being published as ultimate viewpoint and opinion.

This processual character also implies that there may be a certain educational value to such discussions. While the contributor did not appear to be surprised that the comment received attention on other platforms beyond the mailing list, he did describe these as missing the point of a dynamic discussion and ignoring his potential to change. All emails in this thread were shared with groups/individuals potentially facing tensions and problematic social dynamics. They were not meant predominantly as public statement and not necessarily articulations of adamant opinions.

The comment needs to be considered as procedural element in a communal, dynamic debate for which openness and adjusting attitudes are crucial. From a pragmatist perspective on ethics, the communal debates are not *only* indicating misconceptions. As Swierstra and Rip (2007) highlight: ‘Since Machiavelli, political theorists have pointed out that struggle among an irreducible plurality of perspectives can be productive’ (p. 19). By bringing forward moral concerns and arguments, individuals challenge and negotiate what is considered appropriate in hacker/makerspaces. Based on the online material, of course little can be said about the actual effect of such debates. Yet, one should at least consider the potential for communal, moral change, indicated through such debates, e.g., the emergence of feminist hackerspaces (Toupin, 2014).

Conclusions

Examining gendered, social interaction and discrimination – as discussed in the hackerspaces.org mailing list debate and beyond – facilitates a better understanding of the position of under-represented groups in white male-dominated communities. Such research allows for insights into the social dynamics and rhetoric of gendered marginalisation. It sheds light on the complex, partly subtle factors relevant to the in- and exclusion of women hackers/makers.

Minority groups are not simply facing hostile dismissal of feminist efforts in enhancing the inclusivity of hacking communities, even though the thread demonstrates that this is also a common problem. The thread shows that they likewise encounter more subtle misconceptions which were revealed and put up for discussion in this debate. Examining these issues can inform, support and facilitate initiatives aimed at fostering inclusivity in hacking communities: which are highly relevant to digital skills acquisition and technological innovation. From a societal perspective, this is desirable as women and minority (ethnic) groups tend to be marginalised in many spaces known to be crucial for entering IT professions (see, e.g., McGrath Cohoon & Aspray, 2008; Wajcman, 2007).

The unfolding of the communal controversy indicates that in some cases, possibilities for anonymisation are practically obstructed. This is because individuals engaged in the

research field themselves call attention and link to technically, though tacitly public sources like the hackerspaces.org mailing list. If one wishes to credit their input, publications and awareness raising efforts, this reference eventually allows readers to find mentioned and linked sources. These sources might have been part of a debate which was not necessarily meant to receive wider attention in the first place.

Thus, in some cases, privacy expectations collide with 'publicity expectations', i.e., individuals' endeavours to raise awareness. This dilemma is particularly likely in the context of internet research approaches tracing material across different platforms. In this respect, it is not merely an important ethical question if sources are referenced and quoted, but how they are contextualised. The risk of harming individuals who contributed to primary sources can be addressed by acknowledging the dynamics of the respective communication platform and of individuals' viewpoints.

Normative issues related to communal diversity and the role of under-represented individuals raise complex ethical challenges. The tensions and incidents concerning gendered social dynamics and debates outlined in this paper have lately received renewed, yet still rather moderate attention. Also considering general tendencies of sexism, misogyny and gendered discrimination in internet and tech industries (Harvey & Fisher, 2013; Levin, 2017; Wentling & Thomas, 2009), this is somewhat surprising. On the one hand, this could be related to the already difficult stand of hackers. That these are still widely associated with cybercrime might have fostered an emphasis on countering this misconception: to (rightfully) stress the potential and relevance of related communities in increasingly digital societies.

On the other hand, addressing communal problems rather than their potential also complicates the relation to and interaction with individuals in the research field. Toombs et al.'s (2017) proposal for a feminist care ethics approach to long-term researcher-participant relations is insightful in this context. Based on their research on hacker-/maker-spaces, the authors suggest that sound research ethics should be based on mutual, non-paternalistic care of individuals involved in ethnographic studies. They stress the methodological advantages and the moral appropriateness of researchers' emphatic, authentic and reciprocally caring relationships with participants (see also Toombs et al., 2015).

Yet, the authors likewise hint at a crucial issue emphasised in this paper: '[C]are ethics and a focus on care does not exempt us from maintaining a critical perspective toward how our participants are treated in our studies' (Toombs et al., 2017, p. 56). This should not only apply to the relation between researcher/s and researched subjects, but also to problematic interactions between individuals who are part of the field. A caring relationship may also express itself in criticism on issues which are harmful merely for a minority of community members. But, in turn, this type of caring may be perceived as researchers' biased siding on part of other members. This dilemma also raises the question to what extent researchers may be considered morally obliged to pay attention to certain struggles, even though this complicates ethical decisions and researchers' relation to individuals in the field.

Notes

1. While statistical information on this subject is scarce (Moilanen, 2012), it has been widely acknowledged that women are quantitatively under-represented in hacking communities

(see, e.g. Reagle, 2012, 2017; Fox, 2015; Toupin, 2014). When speaking of ‘minority groups’ in this paper, I refer to individuals who are presently quantitatively under-represented in most hacker/maker communities.

2. Relevance and pitfalls of controversies are also discussed in a growing body of literature on researching sensitive and/or politicised topics, e.g. in studies on ‘griefsquatters’ (Klastrup, 2017) or ‘Islamic State’ (Hutchinson, Martin, & Sinpeng, 2017).
3. This report was written with feedback and contributions from the AoIR Ethics Committee and AoIR general membership. A list of contributors is provided in the report (Markham & Buchanan, 2012).
4. Mills cites hacker Raven Alder, a long-time *Defcon* participant known for being the first woman to give a technical presentation at the conference: ‘Most feminists, I think rightly, feel that hacker culture at conferences is pretty hostile [...] However, the feminist sphere’s way of addressing these issues is tonally enraging for many hackers (Hackers often see this sort of feminism as hostile – someone is telling us what to do!), and you get things like this card drama’ (Alder in Mills, 2012).
5. The terms hackerspace/s and makerspace/s tend to be used interchangeably by community members.
6. I have reached out to the person who wrote this contribution (by email) but was not able to get in touch, i.e., did not receive a reply. I decided to include the quote nevertheless, as it has been included in overtly public sources – which is an issue that I explicitly discuss in this paper.

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